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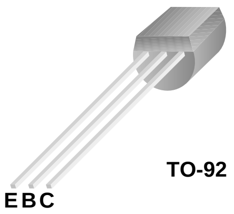
August 2010

MPSA63 / MMBTA63 / PZTA63
PNP Darlington Transistor

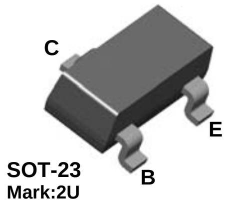
Features

- This device is designed for applications requiring extremely high current gain at currents to 800 mA.
- Sourced from Process 61.

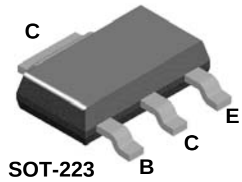
MPSA63



MMBTA63



PZTA63



Absolute Maximum Ratings * T_a = 25°C unless otherwise noted

Symbol	Parameter	Value	Units
V_{CES}	Collector-Emitter Voltage	-30	V
V_{CBO}	Collector-Base Voltage	-30	V
V_{EBO}	Emitter-Base Voltage	-10	V
I_C	Collector Current - Continuous	-1.2	A
T_J, T_{stg}	Operating and Storage Junction Temperature Range	- 55 to +150	°C

* These ratings are limiting values above which the serviceability of any semiconductor device may be impaired.

NOTES:

1) These ratings are based on a maximum junction temperature of 150 degrees C.
2) These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.

Thermal Characteristics T_a = 25°C unless otherwise noted

Symbol	Parameter	Max.			Units
		MPSA63	*MMBTA63	**PZTA63	
P_D	Total Device Dissipation Derate above 25°C	625 5.0	350 2.8	1,000 8.0	mW mW/°C
$R_{\theta JC}$	Thermal Resistance, Junction to Case	83.3			°C/W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	200	357	125	°C/W

* Device mounted on FR-4 PCB 1.6” × 1.6” × 0.06”.

** Device mounted on FR-4 PCB 36mm × 18mm × 1.5mm; mounting pad for the collector lead min. 6cm^2.

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Electrical Characteristics T_a = 25°C unless otherwise noted

Symbol	Parameter	Test Condition	Min.	Max.	Units
Off Characteristics					
$BV_{(BR)CES}$	Collector-Emitter Breakdown Voltage	I_C = -100μA, I_B = 0	-30		V
I_{CBO}	Collector-Cutoff Current	V_{CB} = -30V, I_E = 0		-100	nA
I_{EBO}	Emitter-Cutoff Current	V_{EB} = -10V, I_C = 0		-100	nA
On Characteristics *					
h_{FE}	DC Current Gain	I_C = -10mA, V_{CE} = -5.0V I_C = -100mA, V_{CE} = -5.0V	5,000 10,000		
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	I_C = -100mA, I_B = -0.1mA		-1.5	V
$V_{BE(on)}$	Base-Emitter On Voltage	I_C = -100mA, V_{CE} = -5.0V		-2.0	V
Small Signal Characteristics					
f_T	Current Gain - Bandwidth Product	I_C = -10mA, V_{CE} = -5.0V, f = 100MHz	125		MHz

* Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2.0%

Typical Performance Characteristics

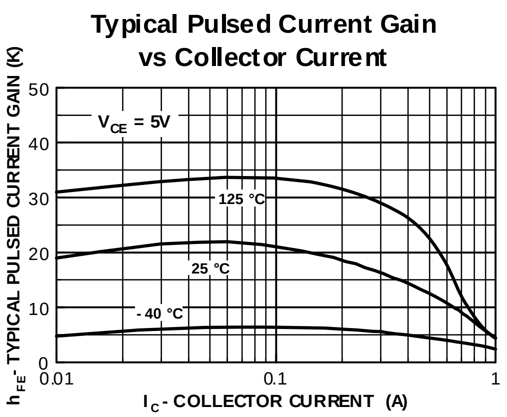


Figure 1. Typical Pulsed Current Gain vs Collector Current

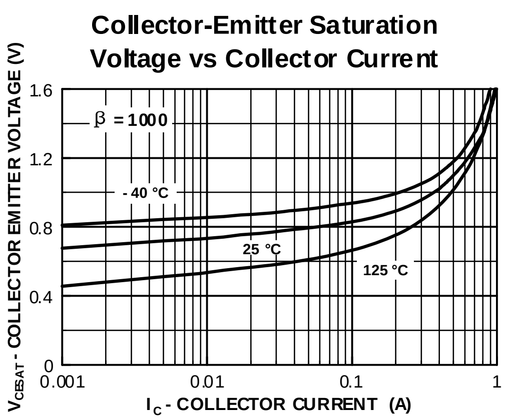


Figure 2. Collector-Emitter Saturation Voltage vs Collector Current

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Typical Performance Characteristics (continued)

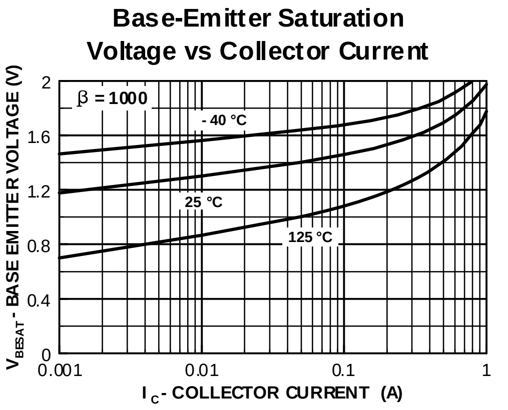


Figure 3. Base-Emitter Saturation Voltage vs Collector Current

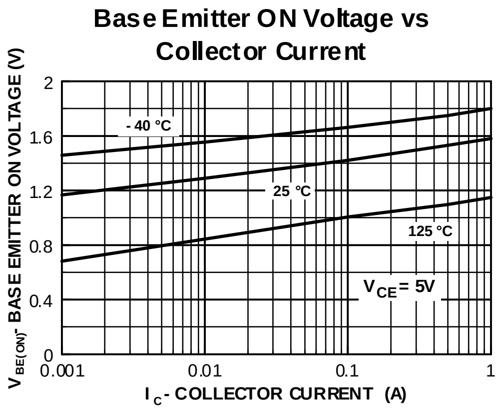


Figure 4. Base-Emitter On Voltage vs Collector Current

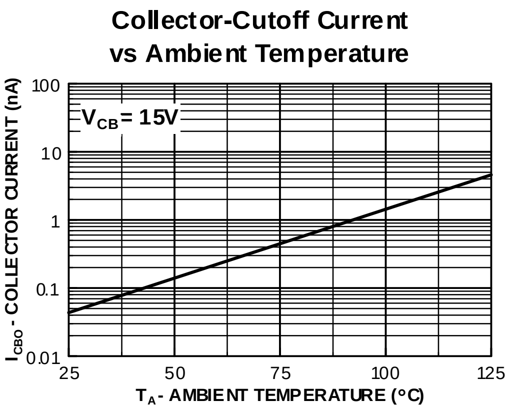


Figure 5. Collector Cutoff Current vs Ambient Temperature

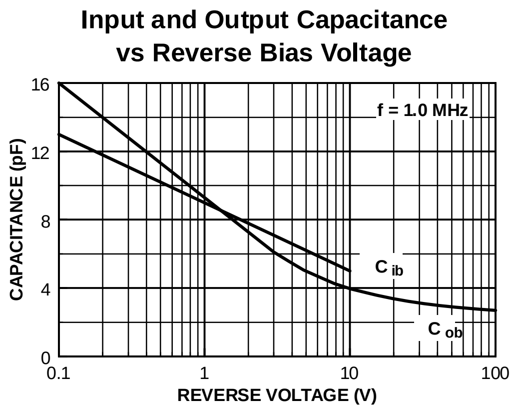


Figure 6. Input and Output Capacitance vs Reverse Bias Voltage

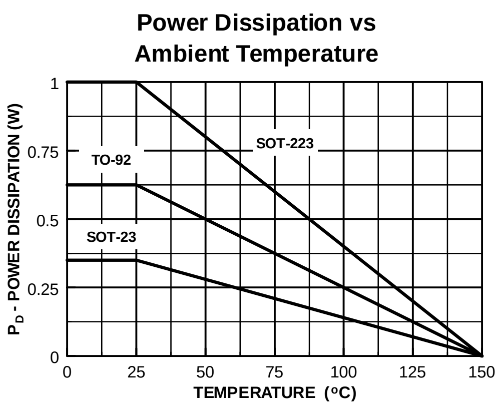


Figure 7. Power Dissipation vs Ambient Temperature

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